

Application No.: 09/912,751
Amendment dated: July 11, 2003
Official Action dated: June 20, 2003

REMARKS

Applicants have amended the claims to more particularly define the invention taking into consideration the outstanding Official Action. In amending the claims, the rejection of claims 17 and 19 under 35 U.S.C. 112, second paragraph, and the objection to claim 19 has been taken into consideration. It is believed that the amendments obviate the rejection of the claims and the objection to claim 19.

The word "groups" has been replaced with "rings" in claim 17 in accordance with the Examiner's suggestion. It is believed that this amendment is clearly and fully supported by Applicants' specification as originally filed and as would be appreciated by one of ordinary skill in the art to which the invention pertains.

The objected to language "or a derivative thereof" has been canceled from claim 17 without prejudice or disclaimer. Claim 19 has been amended to make it properly dependent upon claim 17 as R_2 includes a linear C_{1-18} alkyl group which includes a linear butyl group. Accordingly, it is most respectfully requested that the rejections be withdrawn in view of the amendments to the claims.

Applicants traverse any remaining requirements as claim 19 is fully dependent upon claim 17 and by making the appropriate selection, as noted by the Examiner, the complexes identified by formula (II), (III) and (IV) are definite as recognized in the Official Action.

Applicants also note the Examiner's comments with respect to electrical neutrality but this does not necessarily require that the letter m can only be 1 and the claims should be fairly interpreted as would be interpreted by one of ordinary skill in the art to which the invention pertains.

The rejection of claims 17-20 and 24-29 as being unpatentable over Liao et al. '087 combined with Morishima et al. has been carefully considered but is most respectfully traversed as is the rejection of claims 17-29 and further in view of Sato. The Sato '839 reference does not overcome the deficiencies of the primary reference.

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In the first instance, Applicants wish to point out that an independent claim is allowable because the Morishima reference fails to reach, suggest or disclose every feature of the claimed invention. More specifically, Morishima failed to teach, suggest or disclose a cyanine dye-TCNQ complex as a data storage media, instead, substantially Morishima teaches a dye layer doped with TCNQ. This is not the same as presently claimed and is not suggested by the prior art.

Applicants wish to point out secondly, that Applicants recognize that through doping of the cyanine dye with TCNQ could improve the photostability, because TCNQ is not soluble in common organic solvents and therefore the distribution of the doped TCNQ within the layer of the dye cannot be uniform. In other words, the quality of the dye layer doped with TCNQ in accordance with the prior art cannot possibly produce a consistent and good quality recording layer in accordance with the presently claimed invention. Accordingly, Applicants carried out several experiments and developed a new type of cyanine dye-TCNQ complex which has excellent solubility in common organic solvents so that a recording layer having both increased photostability and excellent quality can be produced in accordance with the presently claimed invention.

In other words, because cyanine dye-TCNQ complex formation can eliminate the non-uniformity and the distribution of TCNQ molecules within the layer of dye when the TCNQ is doped into the layer of the dye in accordance with the prior art. Further, because the cyanine dye-TCNQ complex of the present invention is soluble in common solvents, therefore the recording layer can be formed using, for example, a simple spin coating method and thus the cost of the fabrication can be further reduced. This technique is shown in the exemplification of the present application.

In the Official Action, on page 4, it is urged that Liao et al. '087 teach the use of mixtures of pentamethine and trimethine indolene dyes which have 4-methoxycarbonyl benzyl moieties bound to the nitrogen on the indole ring.

In the Official Action, it is urged that Morishima et al. describes the addition of TCNQ to indoleineic cyanine dyes and that these do not need quenchers. However, Applicants most respectfully submit that Morishima et al. does not suggest the

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compositions of the presently claimed invention which are complexes and not simply doped layers. Morishima et al. describes in item 3, Results and Discussion, that in search of light-fast dyes, we compared photofading rates of dye layers prepared by spin-coating of representative dicarbocyanines to find a linear correlation with reduction potential ($E^{\text{RED}}_{1/2}$) of cyanine dyes as shown in Figure 1. The positive slope suggested that the photofading was of a reductive nature. This observation prompted the authors to study photofading of cyanine dye layers **doped** with oxidative or electron accepting compounds in expectation in that the electron accepting compounds prevent the reduction of the cyanine dyes so as to improve the light fastness of the cyanine dye layers. This doping is in contradistinction to the method of the present invention for preparing the compositions which require the intimate mixing to form the complex as presently claimed. In order to arrive at the presently claimed invention, one must select from all the dyes, the specific dyes shown by Liao et al. and then not to follow the instructions of Morishima in doping these compositions but instead, preparing a complex composition as presently claimed. This complex composition as claimed, possesses a unique combination of properties and provides superior results to that in the prior art. There is no motivation to make the necessary selection absent Applicants' specification which may not be used as a teaching reference.

Specifically, the Official Action fails to appreciate that one of ordinary skill in the art must make the selection of the initial cyanine dye, from the prior art to be used in combination as presently claimed. Such a selection is only found in Applicants' disclosure which may not be used as a teaching reference. In re Fritch, 23 USPQ 1780, 1784(Fed Cir. 1992) ("It is impermissible to engage in hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps.") Accordingly, it is most respectfully requested that this rejection be withdrawn.

In addition, Applicants wish to note the background of inventor Liao. The inventor, Wen-Yih Liao who is a leader in the department of the data storage media technology, had worked in Industrial Technology Research Institute for 23 years and

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describes the conditions for experiments conducted and which it is believed establishes the patentability of the claimed invention as requested by the Examiner.

Condition for technology in the invention

1. The equipments are conventional.

2. The use of temperature as reference to experimentals at page 10~18 of description.

3. How to progress as following

mixing a cyanine-TCNQ dye and an appropriate solvent as a TFP applied on a disk with a weight percent of 1.5%~2.2% under the basis of solute/solution and then;

coating rotationally a mixture of the cyanine-TCNQ dye and the TFP on an unused plastic film by the use of an optical measurement system as ETA-RT (STEAG) to measure a wavelength on a plurality of refractive index as $n+ik$, wherein said the process respectably relates to a absorption of the dye

4. Relative to experimental data between prior art and the invention

Providing a comparison between prior art (Morishima et al.) and the invention following the sheet; and where k is an absorption coefficient:

TERM	$n+ik$ (658nm) of Dye-X (Prior Art)	$n+ik$ (658nm) of Dye-TCNQ (Invention)
L-type Cyanine	$2.383+0.047 i$ (S0363-CIO4)->benefit	$2.150+0.098 i$ (L-E03-TCNQ)->benefit
SL-type Cyanine	$2.104+0.015 i$ (SL-PF6)->benefit	$2.090+0.045 i$ (SL-TCNQ)->benefit
S-type Cyanine	$2.210+0.015 i$ (S-PF6)->benefit	$1.980+0.040 i$ (S-E03-TCNQ)->benefit

As a conclusion, with respect to said the data combinations, a higher solubility of the invention with Cyanine dye-TCNQ complex is better then the Morishima's, which the solubility of the invention is 32 wt% and the solubility of the Morishima isn't higher 0.5 wt% and, could be equal to 0.5 wt%.

Note: Reference to experimental examples at page 10~18, of description, which had been stated the details.

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The deficiencies of the primary references as discussed above, do not render the presently claimed invention obvious and the Sato et al. '839 reference does not overcome these deficiencies. Accordingly, it is most respectfully requested that this rejection be withdrawn.

In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all of the claims now present in the application are most respectfully requested.

Respectfully submitted,

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